Phase 2 Project Summary

Firm:	**Intelligent Automation Inc.**
Contract Number:	**NNX11CA19C**
Project Title:	**A Sensor Management Tool for Use with NASA World Wind**

Identification and Significance of Innovation: (Limit 200 words or 2,000 characters whichever is less)

Proteus provides a desktop client to Sensor Observation Services (SOS), which serve up sensor data via an HTTP-based interface defined by the Open Geospatial Consortium (OGC). There is a lack of general-purpose SOS clients, which can also hamper the adoption of standards such as SOS. Proteus allows individual researchers to discover sensor data from SOSs via an intuitive discovery workflow. Sensor offerings are displayed on NASA World Wind to allow the user to get an overview of their locality. Sensor data can then be previewed in a time series, and sensor data can even be bulk downloaded to disk. Proteus can also include map layers from WMSs. The server side component—the Community Hub—provides a simple alerting capability that allow users to create community groups, configure alert rules and receive alerts via a Atom alert-feed with GeoRSS support or via a public HTTP-based API.

Technical Objectives and Work Plan: (Limit 200 words or 2,000 characters whichever is less)

Technical Objectives:

1. Incorporate the Use of Relevant Standards (OGC)
2. Develop a Sensor Management Tool using Plugin Architecture and Open Source software
3. Provide View Configurability to support various user's needs

Core Work Plan

1. Knowledge Engineering to Determine Sensor Management Tool Views and View Requirements for Different Types of User
2. Sensor Management Tool Design Revisited Intensive
3. Develop alerting support to notify users on service and data events
4. Develop support to allow users to add map views
5. Develop user configurability with perspectives and views
6. Extended discovery capability using catalogues
7. Software development spiral 1
8. Software development spiral 2

Technical Accomplishments: (Limit 200 words or 2,000 characters whichever is less)

We have developed a desktop-based client that integrates with NASA World Wind and connects to any Sensor Observation Service (SOS). The Capabilities document of the SOS can be parsed and all offered sensor offerings with geo-location information displayed on the map. Sensor data can be previewed if the underlying format is supported (currently CSV and limited Observation & Measurement encodings). We developed an alerting capability into the server-side component called the Community Hub. The Community Hub cannot only be used to generate service and data level alerts, but also provides the foundations for future sharing of discoveries between peers.

NASA Application(s): (Limit 100 words or 1,000 characters whichever is less)

Potential NASA Applications

- Use in accessing and managing data for ocean studies (including Gulf of Mexico efforts),
- Use for managing data relevant to hurricane studies,
- Use for managing data from UAVs in NASA – led technology development for western region firefighting mission efforts,

Non-NASA Commercial Application(s): (Limit 200 words or 2,000 characters whichever is less)

Promising Non-NASA commercial applications are:

- Use by Data Managers for managing Sensor Observation Services
- Use by Data Managers for receiving alerts when data delivery is not as expected
- Use by Researchers to monitor sensor data in particular regions and from specific sensor offerings
- Use of Sensor Management Tool regarding data related to agriculture monitoring or ecology monitoring (dept. Agriculture, various state agencies)

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